

Date: Thursday, 9/28/2006 3:50:13 PM
 User: Kim Johnston

Process Sheet

Customer : CU-DAR001 Dart Helicopters Services	Drawing Name : OH-58 AFT X-TUBE ASSEMBLY
Job Number : 28768	
Estimate Number : 10246	
P.O. Number : <u>N/A</u>	Part Number : D058676201
This Issue : 9/28/2006 S.O. No. : <u>N/A</u>	Drawing Number : D058-676-241 REV A2
Prsht Rev. : NC	Project Number : N/A
First Issue : <u>N/A</u> Type : LANDING GEAR	Drawing Revision : A2
Previous Run : 28766	Material : <u>N/A</u>
Written By : <u>JS 06 09 29</u>	Due Date : 10/30/2006 Qty: 1 Um: Each
Checked & Approved By : <u>JS 06 09 29</u>	
Comment : Est Rev: E 04.02.16 Reformat KJ/DS	

Additional Product

Job Number:



Seq. #:	Machine Or Operation:	Description :
---------	-----------------------	---------------

1.0

DC

DOCUMENT CONTROL



Comment: DOCUMENT CONTROL

Photocopy bluefile and create labels as per PPP D058-676-201CHG001

JS 06.10.13 (1)

2.0

D6007106

Crosstube



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

Pick:

Qty Part number Description Batch

1 D6007-106 Crosstube B15988

Check OD = 2.250"; ID = 1.550"

MS 06/09/30 1

3.0

MORI SEIKI

MORI SEIKI CNC LATHE LARGE



Comment: MORI SEIKI CNC LATHE LARGE

1-Fill tube with sand & install plugs DT8534 on both ends as per Folio FA086

2-Turn first side as per Folio FA086

3-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D058-676-241. MS 06/10/01 1

4.0

QC1

INSPECT ALL DIM TO DIM SHEET



Comment: INSPECT ALL DIM TO DIM SHEET

MS 06/10/01 1

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____
 QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Date: Thursday, 9/28/2006 3:50:13 PM
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Customer: CU-DAR001 Dart Helicopters Services

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Job Number: 28768

Part Number: D058676201

Job Number:



Seq. #: Machine Or Operation: Description :

5.0 MORI SEIKI MORI SEIKI CNC LATHE LARGE



Comment: MORI SEIKI CNC LATHE LARGE

1-Turn second side as per Folio FA086

2-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D058-676-241.

MS 06/10/01

6.0 QC1 INSPECT ALL DIM TO DIM SHEET



Comment: INSPECT ALL DIM TO DIM SHEET

MS 06/10/01

7.0 QC8 SECOND CHECK



Comment: SECOND CHECK

EP 06/10/02

8.0 MORI SEIKI MORI SEIKI CNC LATHE LARGE



Comment: MORI SEIKI CNC LATHE LARGE

1-Polish entire outside surface of crosstube

DP 6-10-2 done at Sg#13

2-Remove sand and plugs

MS 06/10/02

3-Scribe part # and batch # using vibrating stylus as per Dwg D058-676-241

Inside of Cuff(Donot engrave on outside of tube)

MS 06/10/02

9.0 HAND FINISHING1 HAND FINISHING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1

Chemical Conversion Coat as per QSI 005 4.1 within 24 hours of machining

MS 06/10/02

10.0 QC5 INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

DP 6-10-3

11.0 BENDING BENDING MACHINE



Comment: BENDING MACHINE

Bend tube as per Dwg D058-676-241 using CNC bender program OH58-af and Folio FT

DP 6-10-3

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

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QA: N/C Closed: _____ Date: _____

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Drawing Name: OH-58 AFT X-TUBE ASSEMBLY

Job Number: 28768

Part Number: D058676201

Job Number:



Seq. #:

Machine Or Operation:

Description :

12.0

QC6

DIMENSIONAL CHECK



Joe 06-10-04



Comment: Inspect dimensions and work To Current Step

13.0

LANDING GEAR 1

LANDING GEAR RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

1-Drill pilot holes in tube as per Dwg D058-676-241 using drill Jig DT8541 & DT8542

2-Ream hole to finish size in tube as per Dwg D058-676-241 using drill Jig DT8541 & DT8542. Check dimensions between holes, both sides on both cuffs, to ensure alignment with saddle holes.

BT 06-10-04

3-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D058-676-241

BT 06-10-04

14.0

HAND FINISHING 1

HAND FINISHING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1

Chemical Conversion Coat as per QSI 005 4.1 within 24 hours of bending and drilling

FL 06 10 05

15.0

QC5

INSPECT WORK TO CURRENT STEP



Joe 06-10-05



Comment: INSPECT WORK TO CURRENT STEP

16.0

OUTSIDE SERVICE

OUTSIDE SERVICES



Comment: Sub-Contracting OUTSIDE SERVICES

Liquid Penetrant Inspection as per QSI 0380

Issue P/O: 2186

LPI as per ASTM 1417 Level 2

Attach copy of NDT results to work order

C 206/10/10 50

17.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Inspect for transit damage Ensure copy of NDT results attached to work order.

RB 06/10/10

18.0

QC6

DIMENSIONAL CHECK



Joe 06-10-10



Comment: Inspect for damage & ensure results are as per Dwg D058-676-241

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

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QA: N/C Closed: _____ Date: _____

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Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: OH-58 AFT X-TUBE ASSEMBLY

Job Number: 28768

Part Number: D058676201

Job Number:



Seq. #:

Machine Or Operation:

Description :

19.0

SPRAY PAINTING

SPRAY PAINTING



Comment: SPRAY PAINTING

1-Prime inside and outside crosstube as per QSI 005 4.2

2-Paint outside crosstube with White Imron as per QSI 005 4.2

06 10 13 (1)

M 06 10 14 (1)

20.0

QC14

Inspect Spray Paint



Comment: Inspect Spray Paint

Then, Wrap in plastic bag to protect from scratches

06-10-16

21.0

D2856400

Abrasion Strip



Comment: Qty.: 0.5800 f(s)/Unit Total : 0.5800 f(s)

Pick:

Qty Part number

Description

Batch

2 D2856-400-694 Abrasion Strip

628258
~~628528~~

RT 06-10-18

22.0

D28911

Support 2.25 dia



Comment: Qty.: 2.0000 Each(s)/Unit Total : 2.0000 Each(s)

Pick:

Qty Part number

Description

Batch

2 D2891-1

Support 628482

RT 06-10-18

23.0

MS2192020

Clamp (per.MIL-DTL-8783C)



Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)

Pick:

Qty Part number

Description

Batch

4 MS21920-20

Clamp M15936

RT 06-10-18

24.0

LANDING GEAR 1

LANDING GEAR RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

1-Install abrasion strips as per QSI 035 using DT8579

2-Install supports and clamps as per Dwg D058-676-241. Torque clamps to 80-100 in lb.

RT 06-10-18

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: OH-58 AFT X-TUBE ASSEMBLY

Job Number: 28768

Part Number: D058676201

Job Number:



Seq. #:

Machine Or Operation:

Description :

25.0

QC5

INSPECT WORK TO CURRENT STEP



Job 10-19 ①



Comment: INSPECT WORK TO CURRENT STEP

26.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Pick Packing Kit

27.0

AN532A

Bolt



Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)

Pick: Packing Kit

Qty Part number

Description Batch

4 AN5-32A

Bolt

M102238 ✓

28.0

AN960JD516

Washer



Comment: Qty.: 8.0000 Each(s)/Unit Total : 8.0000 Each(s)

Pick: Packing Kit

Qty Part number

Description Batch

8 AN960JD516

Washer

M101369 ✓

29.0

MS21042L5

Nut



Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)

Pick: Packing Kit

Qty Part number

Description Batch

4 MS21042L5

Nut (or -5)

M101648 ✓

R006/10/20

30.0

QC4

INSPECT 100% KITS FOR COMPLETENESS



Comment: INSPECT 100% KITS FOR COMPLETENESS

31.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Identify and pack for shipping as per PPP D058-676201

Location:

REV 4 10/10/20 ①

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes ☒ No ☐ DQA: ☒ Date: 06/10/20
 QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
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NOTE: Date & initial all entries

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Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: OH-58 AFT X-TUBE ASSEMBLY

Job Number: 28768

Part Number: D058676201

Job Number:



Seq. #:

Machine Or Operation:

Description :

32.0

QC21

FINAL INSPECTION/W/O RELEASE



①

Comment: FINAL INSPECTION/W/O RELEASE

Done 10/1/06

Job Completion



U 06 10.70

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____
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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

DART AEROSPACE LTD	Work Order: 28768
Description: Crosstube Assembly (OH-58 High Aft)	Part Number: D058-676-241
Inspection Dwg: D058-676-241 Rev: A2	Page 1 of 1

FIRST ARTICLE INSPECTION CHECKLIST

☒ First Article
 ☐ Prototype

Inspection Sheet Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
SIDE A	2.240	+0.005/-0.000	2.245	✓		
	1.870	+0.005/-0.000	1.873	✓		
	1.956	+0.005/-0.000	1.961	✓		
	2.045	+0.005/-0.000	2.049	✓		
	2.093	+0.005/-0.000	2.097	✓		
	2.140	+0.005/-0.000	2.144	✓		
	2.188	+0.005/-0.000	2.191	✓		
	2.228	+0.005/-0.000	2.232	✓		
	0.186	+0.005/-0.000	.186	✓		
	0.500	+0.005/-0.000	.500	✓		
	R0.063	+0.005/-0.000	.063	✓		
	R0.500	+0.005/-0.000	.500	✓		
SIDE B	103.51	+0.005/-0.000	103.51	✓		
	2.240	+0.005/-0.000	2.244	✓		
	1.870	+0.005/-0.000	1.874	✓		
	1.956	+0.005/-0.000	1.960	✓		
	2.045	+0.005/-0.000	2.050	✓		
	2.093	+0.005/-0.000	2.097	✓		
	2.140	+0.005/-0.000	2.143	✓		
	2.188	+0.005/-0.000	2.192	✓		
	2.228	+0.005/-0.000	2.232	✓		
	0.186	+0.005/-0.000	.186	✓		
	0.500	+0.005/-0.000	.500	✓		
	R0.063	+0.005/-0.000	.063	✓		
	R0.500	+0.005/-0.000	.500	✓		

Measured by: MS	Audited by: EP	Prototype Approval:	N/A
Date: 06/10/01	Date: 06/10/02	Date:	N/A

Rev	Date	Change	Revised by	Approved
A	05.04.27	New Issue (P/O D058-676-201)	KJ/JLM	



DESIGN CP	DRAWN BY CP	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED #	APPROVED #	DRAWING NO. D058-676-241	REV. A SHEET 1 OF 3
DATE 00.11.17		TITLE CROSSTUBE ASS'Y (OH-58 HIGH AFT)	SCALE NTS
A	00.11.17	NEW ISSUE	

Qty	Part Number	Description
X	D058-676-241	CROSSTUBE ASSEMBLY (OH-58 HIGH AFT)
1	D6007-106	CROSSTUBE
2	D2856-400-694	ABRASION STRIP
2	D2891-1	SUPPORT
4	MS21920-20	CLAMP

GENERAL NOTES:

- 1) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 2) MATERIAL: MANUFACTURED FROM D6007-106
FINISHED LENGTH = 103.51±0.020
- 3) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- 4) PART IS SYMMETRIC ABOUT CENTERLINE.
- 5) RUN-OFF PART. BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.
- 6) MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 7) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 8) SCRIBE DART PART NUMBER AND BATCH NUMBER IN THIS AREA WITH VIBRATING STYLUS.
- 9) INSTALL D2856-400-694 ABRASION STRIP WITH A 0.13 (REF) GAP ON BOTTOM SIDE OF CROSSTUBE, CENTERED OPPOSITE D2891-1 SUPPORT, PER QSI 035.
- 10) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 11) SEAL EDGES OF SUPPORTS AND ABRASION STRIP USING SIKAFLEX-241/291 SEALANT.
- 12) TORQUE CLAMPS 80 TO 100 IN-LB.

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SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 28768

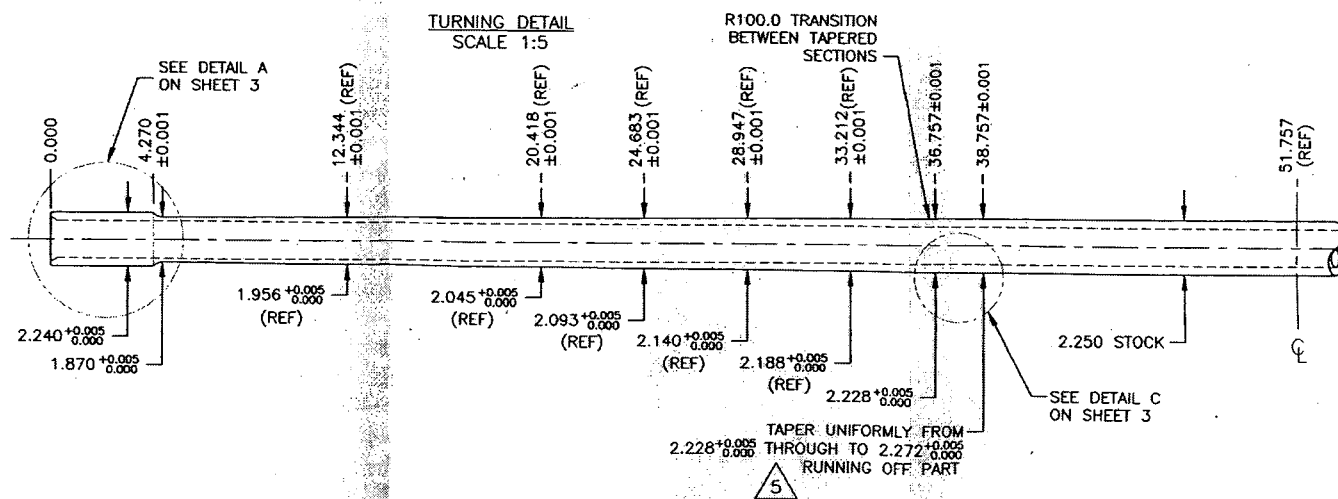
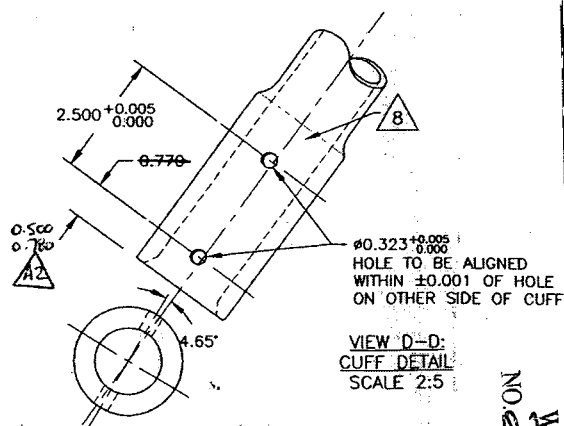
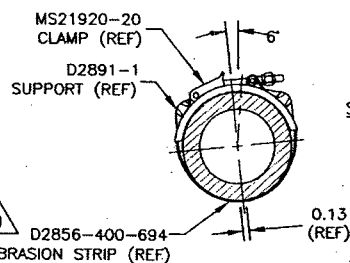
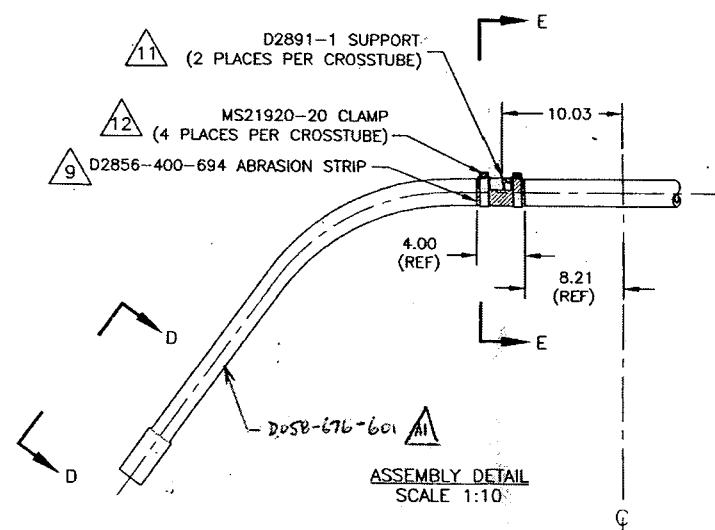
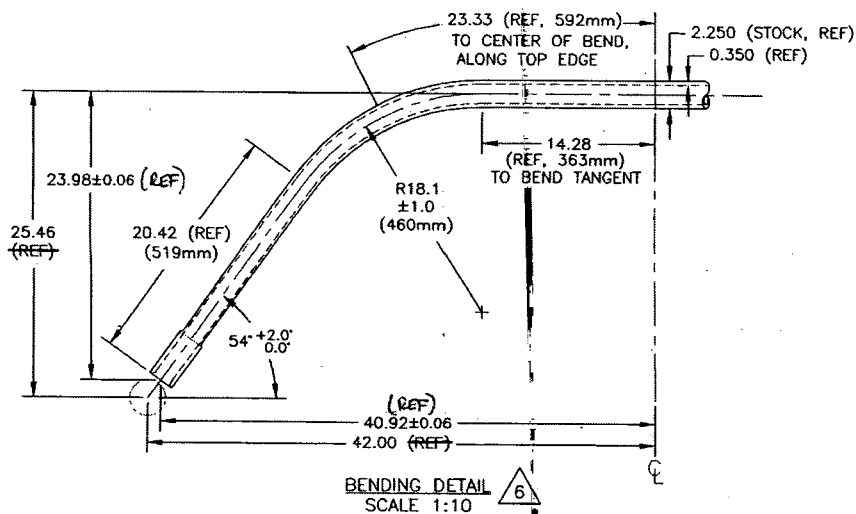
RELEASED
00.11.24

A2	01.07.16	UPDATE DIM TO FIRST HOLE	CP
A1	01.03.07	ADD D058-676-601 P/N	CP

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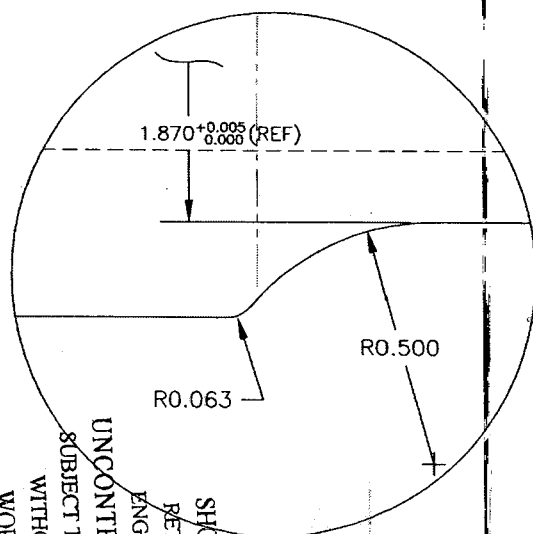
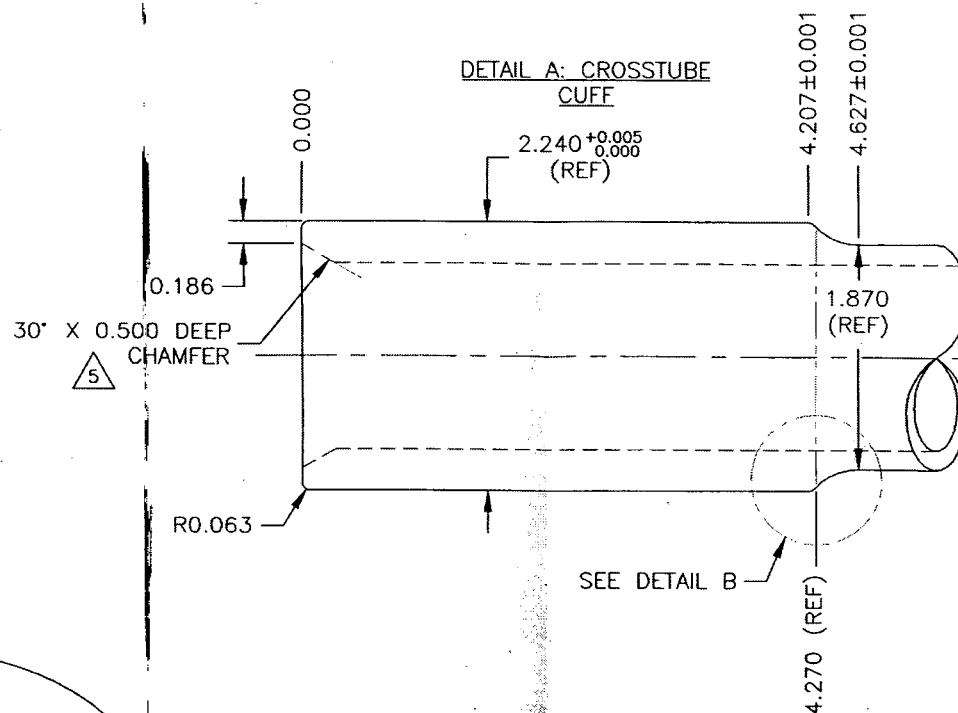
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00.11.24



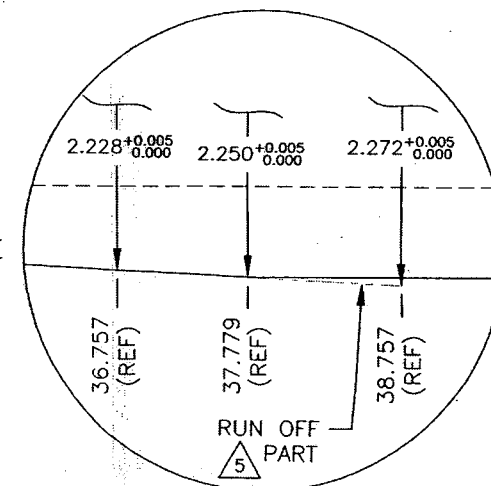
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THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.		CHECKED	APPROVED		
		DATE		DRAWING NO. D058-676-241	SHEET 2 OF 3
				TITLE CROSSTUBE ASS'Y (OH-58 HIGH AFT)	SCALE 1:10

WORK ORDER NO. 28768
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00.11.24

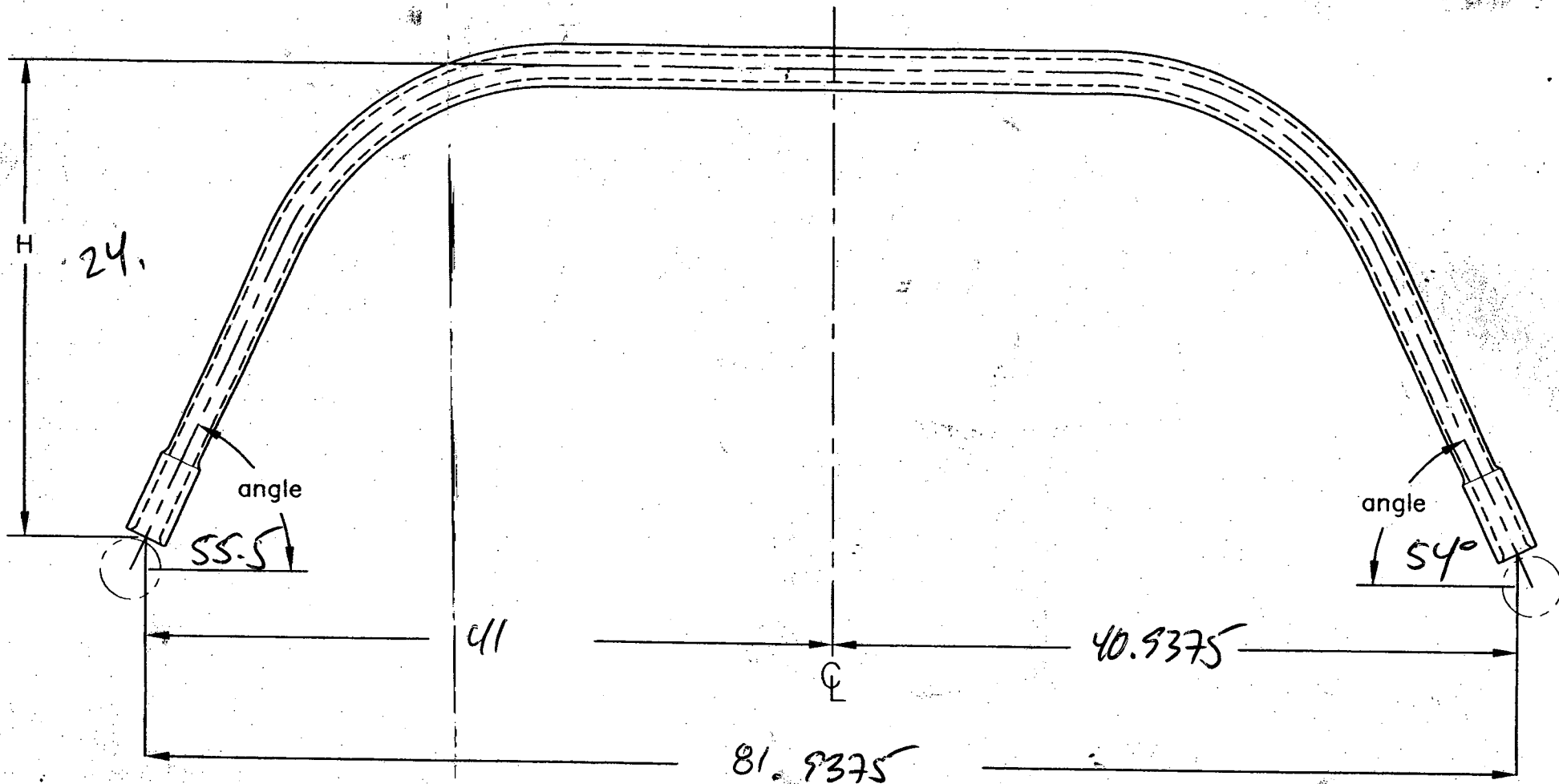


DETAIL C:
TAPER RUN-OFF
NOT TO SCALE



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THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.		CHECKED	#	APPROVED	#		
		DATE	00.11.17			DRAWING NO.	D058-676-241
						TITLE	CROSSTUBE ASS'Y (OH-58 HIGH AFT)
						SCALE	1:1

NO. 28768
WORK ORDER
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DATE: 06-10-04

DESCRIPTION: 058-676-201

BATCH NO: B28768

DRAWING: 058-676-241 Rev. A.

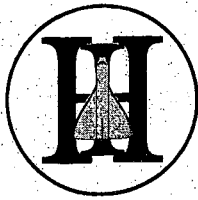
H: 23.98 $\pm .06$

1/2 SPAN: 40.92

TOTAL SPAN: 81.84

ANGLE: _____

J
06-10-04



HeathAir

INTERNATIONAL (1991) INC.

681 Ave. Lepine, Dorval, Québec H9P 1G3
Tél.: (514) 636-1000 • Fax: (514) 636-0031

W.O. N° 34996

A.M.O. Number: 46/90

NON-DESTRUCTIVE TESTING REPORT

AIRCRAFT / COMPONENT INFORMATION

REGISTRATION:

MODEL/TYPE:

SERIAL NUMBER:

TOTAL HR/LDG:

OPERATED BY:

BASED AT:

INSPECTION REQUIREMENTS

Carry out FPI of six (6) cross tubes (external surface) as per ASTM E-1417-05 and the Dart QSI 038, Section 4.1.1 (on file at client) - parts delivered to HeathAir.

Qty. (4) P/N D058-676-101 S/N's B28676, B28675, B28660 & B28467

Qty. (2) P/N D058-676-201 S/N's B28768 & B28765

☐ RADIOGRAPHY

☐ ULTRASONIC

☒ PENETRANT

☐ MAGNETIC PARTICLE

☐ EDDY CURRENT

INSPECTION REPORT

Fluorescent penetrant inspection was performed in accordance with the above requirements on six (6) cross tubes.

Note: A Level 3 penetrant was substituted for the requested Level 2 (3 is more sensitive)
Ardrox 970P25E Batch #04B503.

Six (6) cross tubes PASSED inspection.

THE MAINTENANCE DESCRIBED ABOVE HAS BEEN PERFORMED IN ACCORDANCE WITH
THE APPLICABLE STANDARDS OF AIRWORTHINESS

INSPECTED BY: 

DATE October 6, 2006

INSPECTION
STAMP(S) Not Required

CUSTOMER INFORMATION

CUSTOMER: Dart Aerospace

P.O. NUMBER

00002186

ADDRESS:

CONTACT NAME:

LABOUR	@	\$
MATERIALS	@	
TRAVEL EXPENSES	@	GST
HOTEL EXPENSES	@	PST

INVOICE NO.

TOTAL \$